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March 1954

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The JOURNAL *of* GEOGRAPHY

CONTENTS FOR MARCH, 1954

Some Notes on Agriculture in Costa Rica. By Frank J. Thomas ... 97

Mr. Thomas served in the Army in the Panama Canal Zone where he did aerial photographic interpretations for the Mapping Branch of the Inter-American Geodetic Service. He later graduated from the University of Colorado and is now geographer and computer for the Instituto Geografico Nacional de Costa Rica.

Three Lessons in Mapping. Lesson II. Profiles from Maps. By M. Melvina Svec 104

This is the second of a series of three articles which Miss Svec has found to be practical in the training of teachers.

Urban Land Use Maps: Their Role in the Social Studies Program. By Bertrand P. Boucher 106

Mr. Boucher is a member of the Geography staff, State Teachers College, Upper Montclair, New Jersey. He has taught at Aroostook State Teachers College and Upsala College, East Orange, New Jersey.

A Community Approach to Political Geography. By Raymond W. Stanley 112

Mr. Stanley is substituting for Dr. Colvin V. McKim at Fresno State College, while completing his doctoral dissertation for the Department of Geography, University of California at Los Angeles.

A Colored Slide Collection for Geography Teachers. By John H. Thompson 117

Dr. Thompson is Assistant Professor of Geography, Syracuse University and in charge of Economic Geography programs there. He served as Co-leader of the New England Excursion of the International Geographical Union and also was Co-author of the guidebook designed for that excursion.

Some Basic Problems Concerning Inventory of World Land Use. By Charles Y. Hu 123

Dr. Hu, University of Maryland, was born in China and took his Bachelor's Degree at the University of Nanking in 1930. He has traveled widely in China, Japan, Korea, Asiatic Russia, Chinese Turkestan and various parts of North America. He is author of numerous articles on military geography.

Geography and Resource-Use Education. By Sigismond deR. Diettrich 131

Professor Diettrich is head of the Department of Geography, University of Florida. He was born in Hungary and took graduate work while there. He holds advanced degrees from universities in the United States, and his teaching experience includes universities in both the United States and Hungary.

National Council at Work. By Otis W. Freeman 139

Geographical Publications 140

Plan to attend the San Francisco meeting of the National Council August 20-22, 1954.

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VOLUME LIII MARCH 1954 NUMBER 3

SOME NOTES ON AGRICULTURE IN COSTA RICA

FRANK J. THOMAS
San Jose, Costa Rica

Costa Rica is strictly an agricultural nation. Nearly two-thirds of its actively employed population is engaged in farming. Yet altho such a large portion of its citizenry tills the soil, food costs are very high and family budgets rock in disequilibrium. Because such a large part of the budget goes for food, people cannot possibly release sufficient funds to improve their standard of living.

Food costs are high chiefly because agricultural production is not as efficient as it should be and the productivity per unit land area and man hours is not large enough. It is evident, therefore, that the key to Costa Rican prosperity lies in more efficient farming and in the greater production of crops of prime necessity such as rice, corn, sugar and beans, and selected export items of large demand.

MORE EFFICIENT FARMING NEEDED

Today, more than ever before, the people are talking about the fertility of the land, soil conservation and increased productivity thru the use of advanced technology and mechanization. This interest is the result of patient and persistent work on the part of government organisms and other such entities as Point Four and the Inter-American Institute of Agricultural Sciences located at Turrialba.

Without a doubt, the greatest efficiency in Costa Rican agriculture would come about thru better land use and a better adaptation to the physical environment. The greatest immediate need is for the re-orientation or re-location of the corn and sugar regions of the country. Corn that should be located on the Pacific or Atlantic coastal regions and farmed extensively with modern mechanized units, on flat land and on an entirely commercial scale, is pitifully grown on erodible slopes of the interior Meseta Central. Units there are small and cultivation methods are primitive. The estab-

lishment of the corn region on the flat coastal regions would possibly enable the rise of other industries such as beef cattle feeding, poultry enterprises and others equally suited to the new conditions.

On similar grounds stands the sugar industry. Presently located in the Meseta Central, cane growers today are making big profits, but at the expense of the consumers. Besides competing for labor which should be used on the coffee plantations, sugar cane requires from 18 to 22 months to reach maturity in the highlands as compared to 12 months on the coastal regions. This should be reason enough to shift the cane zone to the coasts. Yet the movement will probably not begin regardless of repeated recommendations by professionals and technicians, until new growers enter the coastal region and start growing cane more efficiently.

It is hoped that this efficiency will automatically force the Meseta Central growers out of business and make them move their operations to the coast. In a recent speech, President Otilio Ulate advised cane growers that the sugar of the nation was not being grown where it should be. To support his statement, the chief of the Sugar Cane Section of the Department of Agriculture stated that the "Pacific coastal region had an illimitable quantity of land, cheap and fertile terrain, and sufficient water to make irrigation possible during the dry season."

The government has taken and is taking steps to distribute to agriculture more funds from the national budget. Just recently Cornell-trained Economy Minister, Alfredo Hernandez Volio, destined 20 million colones (3 million dollars) to agriculture for the purchase of more production goods. The big problem in more efficient farming, therefore, is not capital, altho this could be increased, but rather better orientation of the existing agricultural zones of the nation and the availability of more trained farm operators.

Undoubtedly the chief problem in obtaining farm operators is the preference of most Costa Ricans to live a life of ease in San Jose. Being the capital of the nation and the economic, political and cultural center of the nation, its attraction is too great to resist. As a result, more and more farmers are migrating to the city and less young men are going to the country to till the soil. Most of the young men of the middle and upper social classes prefer to work in some branch of the public administration or in a bank. However, with the improvement of rural living conditions and transportation facilities it is evident that more people will try their hand at farming.

THE MESETA CENTRAL

The Meseta Central today as in the past is the food basket of the nation. This intermont basin is a structural depression filled with porous volcanic ash which remains rather level and undissected except close to the headwaters of the rivers which drain the basin. Soils are rich and agriculture very intensive. Measuring some 150 square miles in area, the Meseta Central is the heart and core of the nation (Fig. 1).

The population is dense—about 1,000 per square mile, mainly because the birth rate is so high while the death rate low. Costa

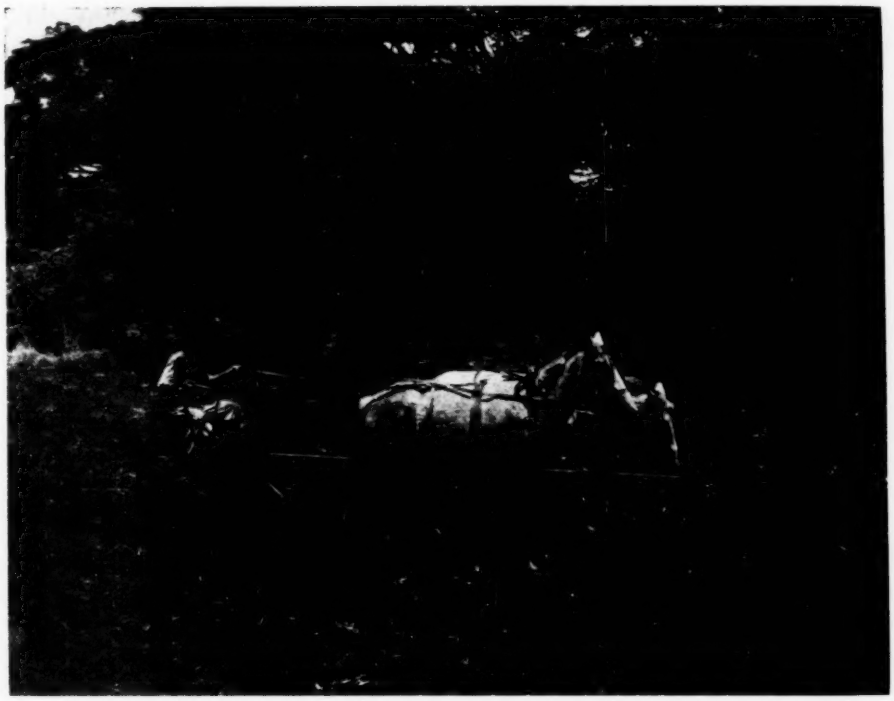


FIG. 1. Altho tractors and other motor power are quickly replacing old methods of cultivating the land, animal power is still widely used in Costa Rican agriculture. This farmer is preparing his soil on his farm in the Meseta Central.

Rica has the highest net rate population increase of all the Latin American countries. But this does not worry officials as slums are unheard of in the larger cities and in case of over-population in the Meseta Central, there is the General Valley, another intermont basin, where settlement is feasible. Population, too, in Costa Rica is mostly of pure white Spanish stock thus making sociological

problems almost non-existent. The fact that San Jose is located at an altitude of over 3,000 feet above sea level where the climate is cool and pleasing is one reason why intellectual endeavor and material progress have been more rapid there than in the other less favorable regions of the country.

COASTAL REGIONS

Atlantic. In contrast to the favorable climatic conditions of the Meseta Central are the hot, humid, coastal regions. Cultivation on these coastal regions until the turn of the century was undertaken only by a few intrepid individuals. Not until the United Fruit Company entered the Limon area on the Atlantic coast in the early 1900's did farming there become important. In a few years the company eradicated yellow fever, reduced malaria and established such efficiency in its farming methods that banana production reached an all time high of 11 million stems in 1913. Production remained high until the Panama disease, a soil fungus disease, invaded the plantations and caused a transfer of the crop to the southwest Pacific coast (Fig. 2). Nevertheless, diversification was sought by the company and abandoned banana lands on the Atlantic were used for cacao, abaca and African oil palm.

Now, with the recently discovered flood control method of rehabilitating Panama diseased lands, banana growing will once again be undertaken on the Atlantic side. The heavy capital expenditures amounting to approximately 17 million dollars which the United Fruit Company will make available in the future will make of Limon Province one of the greatest export agricultural regions in the world. Shipping facilities at Port Limon will be improved and a new railroad will be built to penetrate deeper into tropical jungle where thousands of acres will be cleared for bananas. Company officials estimate that the region will be in full production within five years. Cacao, abaca and oil palm plantings will also be expanded. Already assured of an inexhaustible source of raw material, Costa Rican domestic capital has built a huge paper mill which will utilize the waste fiber of the abaca plants located in the area.

In the Atlantic coastal region corn cultivation is carried on but not on the large scale it should be. Altho two crops a year can be obtained because of no long dry period, the main difficulty there has been the excessive amount of moisture. The government, how-

ever, installed a corn dryer and this has made it possible for the farmers to have their corn processed. Yucca growing has taken on impetus and most of the crop is sold to the National Production Council which purchases it at an established minimum price. This region holds great promise for cattle raising as forage is available the whole year round. Transportation facilities to Port Limon are good.

Pacific. On the Pacific coast, especially in Guanacaste Province (now the "new frontier"), grain production has been stepped up

FIG. 2. Bananas being taken from a United Fruit Company plantation to the main line where stems will be transferred to large box-cars. Refrigerated ship waiting at pier can carry 78,000 stems in one trip.

considerably owing to the incentives offered by the minimum prices of the Production Council. This year alone the Council purchased 3 million colones of corn, rice, peanuts and sesame. Cotton, which has taken on significance since 1949, has become the Cinderella crop of the region (Fig. 3). The possibilities for cotton are great as yields are high compared to yields in other countries and the fiber is long and has a high tensile strength. An increase in cotton acreage would easily put a stop to imports.

FIG. 3. Rows of cotton in Guanacaste Province. Cotton is destined to play an important role in Costa Rican agriculture if yields and fiber continue to be superior to those in other Latin American countries.

COFFEE

In Costa Rica coffee is king and with good reason, for there are 21,576 coffee growers and 118,600 acres dedicated to it. Besides being the most important export crop grown by the Costa Ricans themselves, coffee takes up more than 50 per cent more land than any other crop. Today, Costa Rica, together with Colombia, vie for the highest coffee quotations on the world market. Unlike growers in the other countries, Costa Rican coffee planters are unperturbed whenever word comes that Brazil and Africa intend to expand their acreages. There has always been a great demand for Costa Rican coffee and that demand will continue as long as she continues to produce the coffee with the world's highest caffein content. As a result of its fine blending properties, coffee from Costa Rica is used to improve varieties from the other countries and will be sought after for many years to come. Once the land in the Meseta Central

now occupied by sugar cane and corn is released, coffee may be expanded.

SOIL CONSERVATION

Soil conservation long neglected and completely disregarded is now being given attention. A recent contest conducted by the Department of Agriculture on "Why Must We Conserve Our Soil" brought in over 1000 entries from all over the country. Laws have been enacted punishing those persons who clear their fields by burning. Several forests which were being denuded by charcoal makers have been turned into national parks.

CONCLUSION

It is readily observable, therefore, that agriculture and conservation are receiving the attention they deserve in this tiny Central American republic. Moreover, Costa Ricans are fast becoming aware that what they need is not exactly to bring more acreage under the plow, but rather to intensify what crops they now produce and to grow them more efficiently. Farmers are also becoming aware that agricultural products should be produced where they can be produced more efficiently and not where they are to be consumed. This idea is already taking hold and causing a shift in the farming activities of many.

Together with a re-orientation of its chief staple crops and the intensification of coffee, high-valued vegetables and the expansion of the dairy industry in the cool highlands, the country hopes to achieve a producing capacity which will lower consumer prices. Ultimately, this will release the money so badly needed to improve the general standard of living.

Altho Costa Rica is still considered "underdeveloped" it may not be long before she will change her status to "developed."

REMEMBER

Annual Meeting, National Council of Geography Teachers
Palace Hotel, San Francisco, August 19-20, 1954

THREE LESSONS IN MAPPING

Lesson II. Profiles from Maps

M. Melvina Svec
State University Teachers College, Oswego

Relief shown on a flat wall map lacks reality and perspective. A quick way to gain a better idea of the relief features, the ups and downs across the face of the earth, is to run a profile. This helps pupils to understand the meaning of contour lines and color layers that show relief.

Materials. Only three pieces of material are needed. The size of squares on the graph paper to be used should be suited to the grade level. The contour map or color layer map from which the profile is wanted, and a sharp pencil complete the necessary tools.

Choice of Profile. Select on the color layer map the line along which the profile is to be run. If a longer piece of graph paper is needed, assemble enough sheets to take in the area selected. Hold the edge of the graph paper in any direction desired so that it crosses several different color layers. For example, a southwest to northeast line might run from the Pacific Ocean to Los Angeles, across Death Valley, to Salt Lake City; another from the Black Hills to the Lake of the Woods and on to James Bay; a west to east profile across South America crossing the Bolivian Plateau; a north-south profile across the Alps. The choice of the area would be guided by the units under study in the classroom. It is advisable to include water depths where given, lake elevations and depths when possible.

If the profile is to be made from a contour map such as a USGS sheet, it is well to select the place where contour lines are numbered and heavy brown lines can be located. Since this is rather close work, a few trial runs and samplings will help one get the idea of how it will work out in final copy.

Collecting the Data. Place the upper edge of the graph paper held lengthwise along the route selected. When colors change, make a tick on the edge of the graph paper and record lightly the elevation for that point. Also indicate the position of cities, a small "v" for a river valley, or mountain peaks. Jot down the names of such features at the place marked for them. If boundaries are crossed, show them by suitable symbols and give the names of the political

units. Sketch in compass directions by the use of a pair of intersecting lines of latitude and longitude before moving the graph paper from the map.

If the contour map is used, make a tick along the upper edge of the graph paper for major changes in elevation as shown by dark numbered lines and jot down the elevations. Also add any other features as suggested for the color layer maps above.

Recording the Data. Select a heavy line on the graph paper or draw such a line in about the middle of the sheet, and call it sea level. In the margin at the left, start numbering each line above sea level to show vertical elevations. The unit used might be 1000 ft. If the profile is over flat land with little change in elevation, perhaps a unit of 500 ft. is better. If the profile is across the Himalayas, then a unit of 2000 ft. or 2500 ft. for every graph line is better. The smaller the scale of the map from which the profile is taken the larger the unit needs to be for the vertical scale, especially if vast contrasts in elevation above and below sea level are to show on the profile. Vertical exaggeration is the one BIG problem in running a profile.

Now transfer the elevations at the upper edge that are located by the tick marks down to their proper place just below them on the line above sea level that is given as the elevation for that number. Also show the location of other features such as cities, rivers, lakes and of course their proper elevation.

The last step in the construction of the profile is to connect the points of elevation. The lines should suggest some irregularities in the surface with depths and heights within the limits of that color layer. The line rises and falls gradually, as there are few places with cliffs and ledges. However, the contour map used as a base shows cliffs and steep slopes more accurately than a color layer map.

If the completed profile shows a fantastically elevated mountain range or if the relief looks unreasonable, then the fault probably lies with the choice of vertical scale. An adjustment should be made. A trial sketch of the profile before marking heavy lines would help to discover this fault before making the final copy.

To complete the profile, letter an appropriate title with data on direction and distance covered. Such a caption should agree with chart details as the eye follows across the page. For example: "NW to SE from Pikes Peak, Colorado, to Fort Worth, Texas, a

distance of about 650 airline miles." Label names of cities and rivers and show state boundaries, state names, the compass and any other details noted.

Use of the Profile. The profile gives a better understanding of relief relationships. It also gives meaning to color layers and contour maps. The profile helps students to visualize the real thing mapped. In addition such a profile, when cut out and placed upright, serves as the pattern for a relief model which should bear a reasonable likeness to the area intended.

Conclusion. Pupils and teachers who use the suggestions given in the Three Lessons in Mapping will find other ways to make the activities meaningful and practical. Different grade levels and projects require modification and adaptation of any recipe that is tried out.

Lesson III follows soon in another issue.

URBAN LAND USE MAPS: THEIR ROLE IN THE SOCIAL STUDIES PROGRAM

BERTRAND P. BOUCHER
State Teachers College, Montclair, New Jersey

Recent writers in the field of secondary education emphatically urge the incorporation of a community survey in the social studies program of the junior high school. It is maintained, and rightly so, that a study of this type forms a firm background for studies of other communities, whether foreign or American; moreover, a thoro understanding of local conditions and problems is certainly one of the primary requisites of citizenship training. Proceeding from the known and observable to the unknown and unobservable, the student is properly trained to achieve greater understanding of his total environment.

URBAN LAND USE MAPS

If, therefore, a community study is a worthwhile project, the social studies teacher should be cognizant of the inherent possibilities of an urban land use map. Long a tool of the urban geographer and city planner, it is unfortunate that teachers have not been aware of its tremendous value. The orderly, two dimensional classification of data enables the adolescent to perceive at a glance re-

lationships and patterns of land use which, otherwise, would rarely be revealed.

An urban land use map depicts just what it claims—the various functional uses of land within a city or town. Broadly objective, but subjective in detail, a land use map necessarily reflects the mapper's personal ideas and views, varying in complexity and completeness in accordance with the desires of the mapper. For the junior high program, a map should be as simple as possible—if too detailed it will tend to confuse and undermine student interest. On the other hand, an oversimplified map will lose a great deal of value if essential information is lacking. What then constitutes an optimum map? It should delimit or diffentiate the following urban functions: 1. retail and service, 2. industrial, 3. wholesale and storage, 4. residential, 5. institutional and 6. transportational. These major divisions can, of course, be subdivided. This may be deemed advisable if a large scale map is to be made of one particular portion of a city. As an example, details of residential land use can often be mapped as illustrated in Fig. 1. Thus such aspects as age of

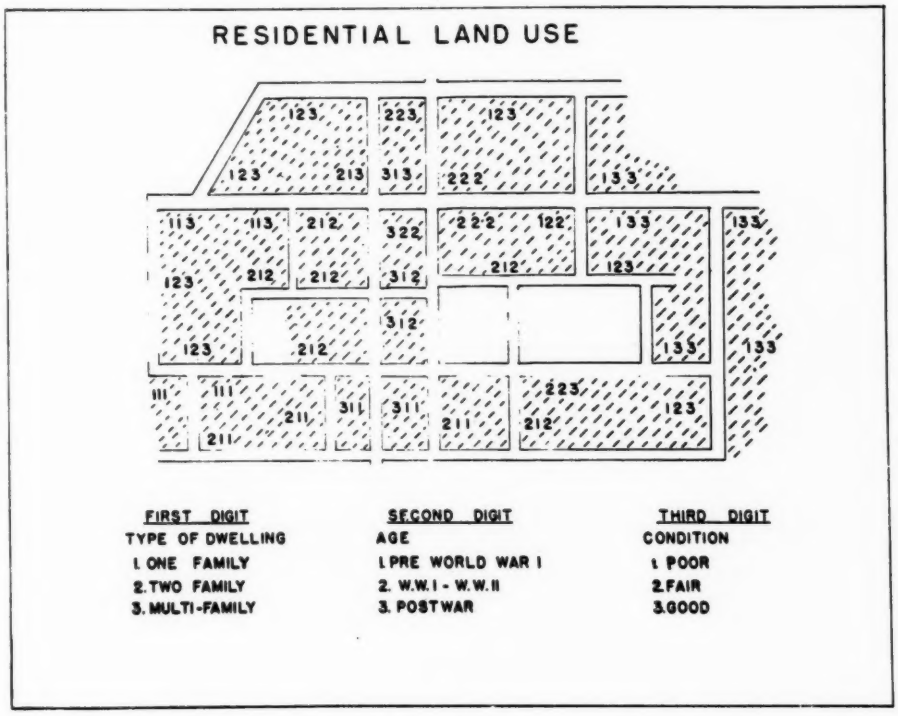


FIG. 1

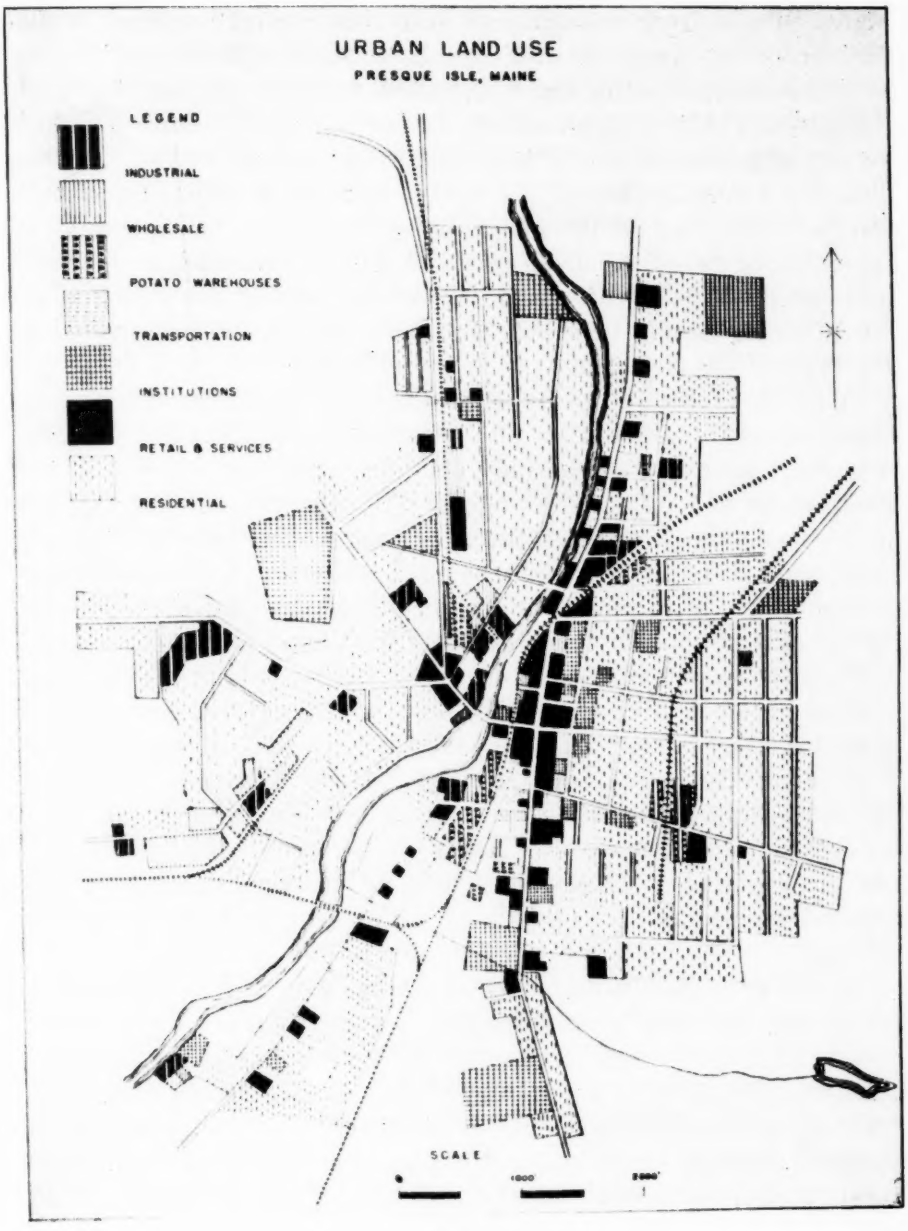
buildings, number of family units, distance between houses, condition of buildings and grounds, type of building material, etc. can be areally depicted. The teacher who is planning a unit on slum housing may very well profit by a more detailed mapping of her town's or city's residential area.

Prior to the actual construction of a land use map, the students should be thoroly briefed as to the purpose and objectives of the study and should also be made aware of the importance of accuracy and consistency of effort. Terms should be so defined that students will readily differentiate between various types of urban land use: e.g. industrial vs. service establishments. Decisions must be made beforehand as to the classification of public utilities, combined wholesale-retail firms, railroad repair shops, railroad storage sheds and combined residential and business dwellings. A complete discussion of these problems before actual mapping will prevent much confusion and wasted energy.

In the construction of the map, the class or group should be divided into small teams, each being assigned one particular portion of the city. Team equipment should consist of a set of colored pencils, a base map of the team's particular area, and a code sheet for reference and guidance. Since a land use map usually reflects functional use of only one floor, street floor usage should be shown. A five story apartment house whose first floor has been completely converted to commercial purposes would be shown under the color symbol used for retail and services. The mapping of industries should indicate not only the buildings occupied but the total land surface utilized by the firm. As the teams complete their surveys, colors should be transferred from the base maps onto a large master map of the entire city.

Approach for Detailed Study

The completed map is then a jumping off point for a detailed study of the community. To illustrate the educational value of such a map, an urban land use map of Presque Isle, Maine, is herein used as an example (See Fig. 2). An examination of the central business district indicates quite clearly the interplay of various forces which have resulted in the nucleation of commercial activity at this point. What are some of these geographic factors or forces? Some important factors are: 1. Water power sites (the stream is dammed just below the central bridge), 2. the fact that this central bridge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INSTITUTIONS
RETAIL & SERVICES
RESIDENTIAL
SCALE
1000'
2000'

FIG. 2

was the first built across the stream, 3. the funnelling of all of the routes to and from Presque Isle into this central location, 4. the location of the principal rail line, 5. location with respect to the better residential areas, and 6. favorable topographic features (not indicated on this map, however). It seems evident, therefore, that the city expanded outward in all directions, especially to the north. Thus the business district is a center because of radial expansion and not because it is the geographical center of the community. Special note should be taken of the ribbon-like extension of urban land use along some of the major routes leading out of the city. The students should be asked to explain the principles governing this type of development.

A study of the industrial and wholesale land use reveals the alignment of these activities along the rail lines. Thus the concepts of transporting and marketing goods are made more meaningful; the children will thus understand and appreciate the operation of these economic principles in the local community. Attention should be directed to industrial and wholesale districts not located along railroad lines. With some stimulation the children should be able to explain this supposedly contradictory locational pattern.

What is significant about the location of school and church buildings? What portions of the city are expanding? Are schools located in these areas? What are the capacities of various schools? Does the city have a park and/or playgrounds? If not, is there need for such a development in the community? Where should a park be located to best serve the needs of the city's inhabitants? A central or peripheral location? These are problems which should be posed with complete or partial solutions being found on the land use map.

One of the objectives of a social studies program is the generation of interest and the instilling of a responsible attitude in the student in matters pertaining to the local, national and world community. A proper step in this direction is a realistic and analytical study of local problems. Non-existent or illogical zoning laws, substandard housing, parking and traffic congestion, shabby, drab streets and juvenile delinquency are some of the problems which lend themselves to map analysis.

If perchance the community being investigated is a one or two industry town, it would certainly be deemed advisable to locate on the map these particular functions. Presque Isle is one of the

largest potato centers in the United States; as a result, potato warehouses (see Fig. 2), fertilizer firms, burlap bag companies, potato processing plants and other associated businesses dot the urban landscape. In such a community, students should understand the economic interdependence of farmers and townspeople. Only then will they realize that the prosperity of Presque Isle is definitely related to the prosperity of nearby farmers.

While occupational guidance is primarily a function of the senior high school, a preliminary exploratory unit could be included in a community study. Patterns of industrial and commercial land use, types of occupations in the community, power sources, raw materials and transportation facilities should each be investigated. The land use map is an excellent aid or teaching tool for initiating these studies. For those who may become future businessmen, a discussion of retail sites would be advantageous. Of course, the so-called "science" of retail location is rather advanced for the junior high student, however an elemental unit treating this topic could be prepared by the resourceful teacher. As an example, an isolated neighborhood grocery store could be compared with one located in the central business district; which one is more prosperous and larger?, why are there differences?, which has the greater trade area?, etc. Students should use the master map as an aid in answering these questions.

Assuredly, the land use map has a definite place in a well-organized social studies program. It increases student interest and awareness of local affairs, develops their powers of observation, trains them in the use of maps, encourages a systematic and scientific approach to community maladjustments and maintains their interest at a high level. Furthermore, such a survey makes classroom discussions more meaningful and worthwhile at the same time revealing relationships and patterns which will encourage students to explore related topics. It is then, a very important resource for the complex process of citizenship training, which is one of the prime goals of education in a democracy.

SEE

Tentative Program of NCGT California Meeting on National Council at Work Page of this issue.
Council at Work, Page 139 of this issue.

A COMMUNITY APPROACH TO POLITICAL GEOGRAPHY

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Ours is a world dominated by political awareness. We think of ourselves as Californians or Texans, as Americans or Englishmen or Japanese, and identify our way-of-life and our locality almost always by political labels. Government is accepted as an indispensable part of life. We expect politics and law to regulate and determine many everyday conditions. So highly do we regard our political institutions that we insist our schools teach government and instill respect for law.

Yet, despite this recognized importance of government in everyday life and in the development of our community, are we able to point out at any time those things, both good and bad, that government has actually done for us or with us? What exactly has it meant in the political rather than the geographical sense to be, for example, in California instead of Nevada? How has political organization in our own community or in any part of the earth affected its physical development, its economic opportunities and its social institutions?

Despite the emphasis of the political in our thinking, it is unlikely, paradoxically, that we could answer any of these questions with competence or conviction. Yet seemingly a practical knowledge of government should require an understanding of the very real and specific part politics and law play in community life. It appears that there is a need for bringing politics down to earth and for helping people see the reciprocal relationship between government and everyday existence. To do this requires not an abstract study of government and politics but an on-the-spot study of the community. If government has affected the community, the proof should be in the community—in its activities, in its structures, in its adjustment to the land it occupies. This is the reality of government.

An on-the-spot study, however, requires a way of isolating and analyzing the elements having to do with government. There may be many excellent ways of doing this. Two, however, seem particularly suitable. One, probably familiar to those who have taught civics and government, organizes observation in terms of the functions of government. The second, which should be known to stu-

dents of political geography, is organized in terms of the structure of political units.

FUNCTIONAL FEATURES OF COMMUNITY GOVERNMENTS

The functions of government, such as police protection, schools and water supply, generally leave some evidence of their existence on the landscape. Thus they are familiar and have mappable features. Civics, government and political science courses are concerned with these functions and their structures. Political geography, however, stresses three important geographic qualities too often ignored or taken for granted. These are their individual distributional patterns, their significance as features producing differences from place to place, and their relation to the total environment.

One function of government is the making and enforcing of laws. The courthouse, police station and patrol car are all familiar features of the community created by government to serve these functions. Their practical significance in the world, however, is their total area of effective action, that is, the length and breadth, the size and shape of the human community for which they perform. In a small county of an eastern state some time ago the people in the only town pushed through a law prohibiting the manufacture and sale of alcohol and the county was logically recorded as dry. The law resulted in the disappearance of saloons from the town and major highways. But no geographer could map much of the county as dry inasmuch as operating distilleries continued to be very much a part of the backwoods landscape. Nor could a geographer list the law as a real governmental force affecting the greater part of the county. The geographic importance of law and government is decided, it must be emphasized, by examining the life and landscape of the community and not from a perusal alone of the statute books gathering dust in the county courthouse.

The very nature of our political institutions has placed extreme importance on area, every governmental function being legalized in terms of a restricted and carefully defined space. This we take for granted, yet its significance we too seldom seek to understand. Most cities have fire protection as one of their functions. A burned house only a few feet outside the municipal boundary, nevertheless, has been proof often enough that this service has meaning only within a legally defined zone. Government officials recognize that

the location of city parks, county roads or state schools should be in terms of the needs of specific areas, that their utility has meaning not in themselves but in the needs of taxpayers and the distribution of the same taxpayers. In one locality an agricultural college might be famous as a governmental institution important to the political area. Its practical significance, however, could probably only be shown by mapping the surrounding area of farms exhibiting better crops, new breeds of animals and improved farm practices. The direct observation of only a few such examples should help the average person understand better the close reciprocal relationship between the value of any given activity of government and its spatial pattern within the community.

Also significant but more difficult to comprehend is the whole complex of conditions associated with government action in any given political unit. It is this combination of functions rather than any individual function that helps to differentiate one political unit from another, that differentiates living in Arizona, for example, from living in Sonora. In some political areas government exists primarily to keep law and order and so touches the land very lightly. In more highly organized states, government often seeks to aid the people to make better use of their environment by supporting research institutions and weather bureaus, by mapping soils and surveying the land, by supplying expert advisors or enacting protective tariffs. And in many nations today, government is engaging in developmental activities, actively building irrigation systems or low-cost housing tracts, subsidizing new industries and the merchant marine or, perhaps, financing resettlement projects or the opening up of new mining districts. In one community for instance, there may be not only police protection but police ambulance service, rural zoning laws, a county farmer's market, public health services, a fire and game warden, a small forest preserve and public park and a transient labor camp. All these together help make that part of the earth different to some degree from neighboring communities under other political jurisdiction. All of these features can, of course, be discussed theoretically in the classroom or the city hall, but their down-to-earth significance to the community can only be made clear when they are identified and interpreted in the community of which they are a part.

Many of the functions of government are created to help solve the problems of the land, so that to some extent every government

reflects its land and the land its government. The most serious problems men face in their conflicting ideas of how to use their earth resources come to the courts for decision. The decision of the court will then somehow be reflected in the way the land is used thenceforth. A barge loaded with gravel moving upstream might be mute testimony that navigation in one state is maintained by law against the strong representation of people who want to dam the stream for power. In another state an extensive plain of small irrigated farms may be proof that government ruled against shipping interests in the use of water and against large landholders in the right to own land. The fact that a quiet residential district grew up in one part of town might be the result of zoning against industries wanting to come into that neighborhood. A nicely wooded ridge preserved from the ax might be the joint work of the nature lover, the farmer downvalley wishing to be protected from erosion and the mill town wanting to avoid floods. These are but few examples. Every community provides an observant person with many and different opportunities for seeing and measuring political activity in terms of their actual meaning in the lives of the people. Only a few such observations would probably make a citizen more aware of the true effects of government on the everyday life of the community.

STRUCTURAL FEATURES OF COMMUNITY GOVERNMENTS

Another way of organizing study of our political environment is based on the fact that political units have structure, meaning they possess, at the very least, political boundaries, organizational centers and component areas. This structure represents, in a sense, the way a people have fitted a governmental organization to the land, not haphazardly but only as the resolution of many conflicting political forces. The process of delimiting boundaries, selecting a political headquarter and integrating the diverse areas bound together in a common political unit forces attention to the many problems calling for political action. A study of the structure of our own political units can't escape measuring the manner in which politics affects the organization and development of our part of the earth.

We find the effects of different governments and laws contrasted most sharply along boundaries. This applies not only to troublesome international boundaries but also to local boundaries. Night clubs and unrestricted housing often flourish just outside many city limits. An invisible line, a true political boundary in the local scene,

decides where your children may go to school, the extent of your public services and the size of your tax. In the Los Angeles area it is not difficult to find boundary streets with well-ordered and serviced housing developments on the city side faced by untidy housing, farm lots and junk yards, seemingly without order, on the county side. In almost any community it should be easy to find a boundary conflict, such as in the zoning of districts or the redefining of city limits, in which concern and emotion are involved in deciding the political future of an area.

That politics is a potent force in the development of areas is perhaps nowhere better shown than in the way governments coddle their capitals. Many a cross-roads center has become a leading town with no other advantage than that of being named the county seat. Political headquarters usually soon become the hub of the best roads of the political area and, as a rule, acquire the official fairgrounds, war memorials and defense establishments. Whereas political boundary zones display most clearly the differences between areas under different governments, the capital or organizational center of every political unit undoubtedly parades for display almost the full set of governmental functions and features that distinguish and characterize that particular political unit from all others. And the relative strength or weakness of a capital can often be judged by the political functions it could not keep to itself, such as the loss of the state college or county experiment station to a competing center.

A study of the structure of a political unit necessitates a recognition of the diverse areas included within it. In so far as the component parts differ in their interests they come into conflict. In Los Angeles county a political battle wages between the Gardena dairy district and the encroaching residential suburbs of the city of Los Angeles. In some rural communities under a single political jurisdiction there often prove to be strong differences, for example, between the mining areas and the farming regions or between the people in the forested mountains and those on adjoining arid plains. Industrial districts needing to get rid of wastes come into conflict with farmers downstream wanting unpolluted waters and with nearby residential communities wanting unpolluted air. These interacting spatial problems must somehow be resolved by political authority. Whatever the decision, each part of the governed area undergoes some change. Obviously this change becomes a part of

the geographic complex, a part explainable only through an understanding of the political organization of the area.

The various structural parts of political units are mappable phenomena fundamental to our culture. To study them contributes to an understanding of the complex relationship between political organization and the development and differentiation of areas. Studied even in a disjointed way as time permits, and preferably along with observations on the functional features of government, they should help to prepare us to answer intelligently the question of what it means in everyday affairs to be a Californian or a Texan, an American or a Japanese.

A COLORED SLIDE COLLECTION FOR GEOGRAPHY TEACHERS

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During the past several years I have accumulated a personal collection of some fifteen hundred colored slides representing every continent in the world. The collection covers not only the far corners of the earth, but is adequate to illustrate a large number of the topics that I, as a geographer, am called upon to discuss. Certain of my classroom lectures, as well as talks on geography to groups outside the classroom, are facilitated and made more informative and more interesting thru use of these colored slides. I should hasten to point out that I have not visited many of the areas represented in my slide collection. The comprehensiveness of the collection has been made possible thru membership in two colored slide exchanges, one of which is now operating at Syracuse University.

Many teachers of geography from different parts of the country have requested information concerning the colored slide exchange at Syracuse. I am, therefore, taking this opportunity to outline the ideas and methods that have proven successful so that other exchanges may be established, and so that more teachers of geography may add effectively to their own colored slide collections.

Several years ago at the University of Washington a number of us interested in both geography and color photography assembled our slide collections for informal evening showings. It was ap-

REPRODUCTION OF A TYPICAL TRANSPARENCY

Geographical Colored Slide Exchange

(Caption as prepared for set on Desert Vegetation
of Southwestern United States)

Shadscale vegetation association, and recent fault scarp along United States Highway 50 just west of Railroad Pass in the Shoshone Range, Nevada. John H. Thompson, June, 1949.

The vegetation is primarily Shadscale *(Atriplex confertifolia)*, a low spinulescent desert shrub somewhat resembling Sagebrush from a distance, but unlike it in ecological range. Shadscale is found in areas of the Great Basin generally below 4500 feet in elevation where it is too dry (less than about 5 inches) and/or too saline for Sagebrush. It is replaced by the Creosote Association in the hot deserts (BWh) to the south. Also in the Shadscale association, but undistinguishable in the degree of detail of this picture, are little Greasewood *(Sarcobatus baileyi)* and bud Sage *(Artemisia spinescens)*. These shrubs are all generally less than 1½ feet in height. None of the plants mentioned above provide much forage value, and the grazing that is carried on in such country is based largely on the sparse understory of grasses.

The fault scarp in the distance is one of the best recent, clear-cut scarps to be found in the Great Basin. The visible vertical displacement at the cutting of the highest spur is about 250 feet.

parent that no one of us had enough slides to illustrate the geography of an appreciable percent of the earth's surface. But, it was equally apparent that if the good slides belonging to each of us were put together into a single collection, that collection would be quite large in size and surprisingly broad in scope. We subsequently made a selection of the best slides and had them duplicated by Eastman Kodak in sufficient number so that each of us received one copy of every transparency selected. Shortly, graduate students and

faculty expressed interest in joining our group in similar, future cooperative efforts. The Washington Kodachrome Exchange resulted. During the first year that this exchange operated it processed 15 sets with four to 31 slides in each set. Four continents and 17 countries were represented, and 23 members ordered 205 sets making up a total of about 3900 individual duplicates!

I brought the idea of a colored slide exchange to Syracuse University when I joined the Geography Department in 1949. The Geographical Colored Slide Exchange, which was subsequently organized, now has a membership of about 35. During the 1951-52 academic year this exchange processed 20 different sets with five to 34 slides in each set. Over 4500 duplicates were distributed to the membership. Titles of sets reproduced include the following: Philippine House Types, The Garment District of New York City, Japanese Rice Culture, Desert Vegetation of Southwestern United States, Urban Scenes and Rural Dwellings in Northeast Brazil, and Mountain Glacial Features in the Austrian Alps.

The constitution of the Geographical Colored Slide Exchange is included below to illustrate the ways and means by which such an exchange may be operated. It might well serve as a rough guide to groups anywhere who would like to organize their own exchange. This constitution was drafted by the membership at Syracuse without legal assistance, and therefore does not necessarily follow a specific prescribed form.

CONSTITUTION
of the
Geographical Colored Slide Exchange

Preamble

Believing that colored slides can be of importance in the spread of geographic knowledge, this organization undertakes the task of facilitating the wider and more efficient use of this medium among Syracuse geography students and faculty.

Article I. Name.

The name of this organization shall be the Geographical Colored Slide Exchange.

Article II. Purpose.

The purpose of this Exchange shall be:

(1) To maintain a small non-profit organization serving geographers associated with Syracuse University.

(2) To facilitate the low-cost exchange of colored slides valuable to geographers.

(3) To encourage the development of photographic techniques best suited to the effective illustration of geography.
(4) To encourage field note-taking and captioning, and the cataloguing techniques best suited to geographic slides.

Article III. Membership.

1. The membership in the Exchange is restricted to persons on the Syracuse campus who are interested in geography and to Syracuse alumni who have an interest in the same field.
2. Membership shall be of two classes; contributing and non-contributing.
   (1) Contributing members are those who have contributed at least one set of transparencies that has been accepted for duplication by the Exchange. In addition, all persons who expressed an interest in becoming members of the Exchange within a week of the adoption of the original Constitution, i.e., the week of October 19 to 26, 1950, and who paid their dues during that time are considered Charter Members with contributing status. To maintain contributing status a member must submit at least one acceptable set for duplication every two years.
   (2) Non-contributing members are those members who do not meet the requirements for contributing membership.
3. Eligible persons become members upon payment of the annual membership fees and upon signing the Member's Pledge. Members shall assume responsibility for payment of annual fees which are due on October 15, of each year. Membership may be terminated if the fees are not paid when due.
4. The membership fee shall be $1.00 for contributing members and $2.00 for non-contributing members.
5. The Member's Pledge shall consist of a declaration of willingness to abide by the regulations of the Exchange. It must include a statement to the effect that all duplicates purchased through the Exchange are purchased with the understanding that they may not be further reproduced or sold without the written permission of the owner of the original transparencies. It further must make clear that the Exchange cannot be held responsible for the loss or theft of transparencies submitted to it and it cannot be held responsible for any actions of any of its members.

Article IV. Executive Committee.

1. The Exchange shall be administered by an Executive Committee consisting of five members. Three members of the Executive Committee shall constitute a quorum at the meetings of the Committee.
2. The right to be a member of the Executive Committee is restricted to contributing members who are residing in Onondaga County.
3. At least one of the five members of the Executive Committee shall be a faculty member of the Geography Department of Syracuse University.
4. At least two of the five members of the Executive Committee shall be geography graduate students.
5. The one mandatory faculty member shall act as Secretary-treasurer of the Exchange.
6. The Executive Committee shall elect from its ranks a Chairman. The Secretary-treasurer may not serve as Chairman.

Article V. Election of Members to the Executive Committee.

1. Members of the Executive Committee shall be elected by the membership of the Exchange. The right to participate in the election is vested in both types of membership providing said members are on the Syracuse campus at the time of the election.
2. A quorum for the election of members to the Executive Committee shall consist of

fifty percent of the membership residing in the Syracuse area at the time of the election.

3. The term of office of members of the Executive Committee shall be of one year's duration, from October 15 to October 15. Annual elections shall be held every fall on a date prior to October 15.
4. Vacancies on the Executive Committee shall be filled within one month of their occurrence, or in October if they occur during the summer vacation.

Article VI. Duties of the Executive Committee.

1. It shall be the duty of the Executive Committee to:
   (1) Accept or reject sets of tranparencies which are submitted to it.
   (2) Establish the costs of slide sets for contributing and non-contributing members in accordance with the Constitution.
   (3) Present accepted sets of slides to the membership.
   (4) Notify members at least one week in advance of presentations of the date, time, and place of the presentations, and of the content of the sets to be shown.
   (5) Enforce the rules and regulations of the Constitution of the Exchange.
   (6) Exercise discretion in accepting applications for membership.
   (7) Undertake whatever other actions that are necessary to the proper functioning of the Exchange.
2. It shall be the duty of the Chairman of the Executive Committee to preside at all meetings of the Committee and to preside or designate a substitute from the membership of the Executive Committee to preside at all presentations of slide sets and any other meetings of the Exchange.
3. It shall be the duty of the Secretary-treasurer to see that:
   (1) An accurate list of current membership is maintained.
   (2) An accurate record of orders and payments by slide sets is maintained.
   (3) Approved sets for duplication are accepted and sent to the appropriate duplicating agency and distributed upon their return.
   (4) The money received for membership fees and for payment of set orders is safeguarded and that expenditures recommended by the Executive Committee are duly administered.
   (5) Off-campus members are notified promptly of slide sets being presented by the Exchange.
4. In appreciation of administrative and secretarial services slide sets shall be made available at a fifty percent reduction in price to the Secretary-treasurer and to one additional member of the Executive Committee as chosen by that committee.

Article VII. Slide Sets.

1. No fewer than four slides shall be accepted as a set.
2. Each slide must be accompanied by a satisfactory caption when the set is presented to the membership. Each caption must include at least an indication of location, approximate date, geographic character of the scene, and the photographer's name.
3. The Executive Committee may accept or reject sets in total or in part.
4. Members desiring sets which have been presented must place their orders and payments with the Secretary-treasurer within two weeks of the presentation. Exceptions to this rule can be permitted at the discretion of the Executive Committee. Payments must be made in cash or by personal check payable to the Secretary-treasurer.
5. Members wishing to receive their sets by mail must inform the Secretary-treasurer of their correct mailing address and furnish the necessary postage.
6. Slides shall be offered for sale to contributing members at the lowest price deemed advisable by the Executive Committee. Non-contributing members shall be charged

at least five cents more per slide than contributing members, but the charge to non-contributing members shall never be less than twenty-five cents per slide.

7. If originals belonging to more than one person are submitted as a set to the Executive Committee, one of the contributors shall designate himself as responsible for all liaison with the Executive Committee concerning that set.
8. Slide sets are not necessarily restricted to color or to 35 mm. size.

Article VIII. Amendments.

1. This Constitution may be amended at any meeting of the membership provided that:
   (1) The membership residing in Onondaga County has been notified at least one week in advance of the proposed amendments, and of the time and place of the meeting.
   (2) Fifty percent of the membership in Onondaga County is present at the meeting.
   (3) Two-thirds of those present favor the amendment.

CONCLUSIONS

Certain conclusions may be drawn from my several years of experience with colored slide exchanges. In the first place, a core of four or five interested and energetic people are required for proper functioning of what is called the Executive Committee in the above constitution. They should know something about both color photography and geography; otherwise the quality of sets selected for duplication will suffer. If the sets selected are good the membership will want them.

Membership in any exchange must be kept reasonably small or administration becomes cumbersome. A membership of more than 35 or 40 probably would entail hiring secretarial help, and might make incorporation almost imperative. On the other hand, a membership of less than six or eight could well result in a dearth of acceptable slides.

Some person who is permanently situated in the vicinity of the exchange headquarters ought to be associated with the administration. Otherwise, for lack of continuity, long periods of inactivity may result. Such inactivity is particularly likely to occur during the summer and fall months when an exchange is supported largely by a student and faculty membership.

Current rates for duplicating colored transparencies are reasonable. Leading duplicating agencies in this country charge 30-35 cents per duplicate which makes it possible for an exchange to pay duplication costs and still distribute slides to members for less than one-half the price charged at most commercial outlets. Furthermore, duplicates handled by an exchange such as is outlined here probably will be more skillfully chosen from a geographic point of

view and are likely to be much better captioned than those secured from most other sources.

Finally, certain subsidiary activities may grow out of the actual exchange of slides. For example, group discussions relative to field techniques in geographic photography or to captioning and filing procedures can be placed on the agenda of meetings. If this is done a colored slide exchange will take on a multiple purpose complexion which makes its contribution even greater than it otherwise would have been.

SOME BASIC PROBLEMS CONCERNING INVENTORY OF WORLD LAND USE

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INTRODUCTORY STATEMENT

In this writer's opinion, one of the most important and significant sessions of the 17th International Geographic Congress recently held in Washington, D.C., from a strict geographic point of view, was the session on inventory of world land use. The original plan of this project, as announced by the Commission, calls for the preparation of a world land use map on the scale of 1:1,000,000. This is indeed an ambitious undertaking. But, if carefully planned and properly executed, such a project will not only offer a good opportunity for the profession of geography to contribute its share to the field of knowledge, but also to enable the solving of some of the pressing problems—particularly the man-land-ratio problem—confronting the contemporary world.

Many well-known workers on land-use problems, notably Professor Dudley Stamp of Great Britain, have participated in this session. Eleven papers were presented and many "beautiful" maps and "colorful" slides were shown and exhibited. Most of the speakers concentrated their reports on some of the land use mapping work done in each of their own areas and explained in great detail the legend symbols and color schemes used on the maps shown; some of them also disclosed the future plans for the study of land use problems in their areas. On the whole, however, few or none of these speakers discussed the broad but basic problems relating to the successful execution of such a project on a global basis. Such

problems, to mention a few examples, may include the following: 1. the availability of base maps in many parts of the world for this inventory survey, 2. the proper role of geographers in this work and the advisability of securing aid and service of other specialists in this connection, 3. the standardization of mapping nomenclature, 4. the basic criteria for establishing a unified scheme for classification of land use types on a world wide basis, 5. the scale of generalization concerning both the proper scale or scales of base map or maps for collecting and recording the land use data (either thru field work or office compilation) and the suitable scale or scales of the final map or maps on which such data may be generalized, 6. the suitability of the presently proposed scale (1:1,000,000) of the final map for accurate inventory and effective planning purposes, 7. the basic tools and efficient techniques required for such surveys, 8. the commensurability of labor and costs involved in this project and 9. the practical usefulness of the maps thus produced.

In so far as the writer is aware, only Professor James has commented briefly on the problem of scale of generalization and Professor Stamp has made a few scattered remarks concerning the problem of subjective evaluation and classification of such land use data. Personally, the writer believes that unless these basic problems mentioned above are carefully considered by the Commission and are thoroly discussed among professional geographers as well as among specialists of related fields, the final maps of this land use survey, as proposed by the Commission, will be only of limited meaning and the maps produced will have only restricted usefulness. Since none of the problems mentioned above were raised and discussed by members of the Panel, the writer wishes to select three of the problems and comment briefly on each in the following pages.

GEOGRAPHER'S PROPER ROLE ON LAND USE SURVEYS

First, the geographer's proper role on this project and the degree of detail and accuracy intended on these maps, with special reference to the practical usefulness of these maps for accurate inventory and effective planning purposes:

No geographer would question the important role he or she may and can play in this project of inventory of world land use. But, to some outsiders, particularly specialists in various systematic fields, there may be doubt as to the degree of detail and accuracy average geographers may be able to obtain in this connection if pursued by

the latter alone. For instance, in studying and inventorying the agricultural land use of an area, it is essential that the investigator be equipped with extensive knowledge on soils, agronomy, botany, etc., before he can accurately observe and soundly evaluate the potential capability of a tract of land concerned. Merely to classify land types as crop land, pasture land, forest land, etc., as average laymen can do readily, will not be sufficient for accurate inventory of land use of an area. While geographers may possess high proficiency to locate, plot and demarcate the boundaries of the various land use types in very general terms on maps in the field, the systematic specialists would furnish more technical and significant details in the field which will be very valuable for subsequent classification and evaluation of the data collected. Therefore, in our deliberation of this important task of land use inventory, it is highly desirable to seek and obtain advices and aids from various systematic scientists, particularly soil experts, agronomists, botanists, etc., for all the mapping work in the field. Professor Stamp recently stated that the complete failure of the huge "Groundnut Scheme" of East Africa undertaken by Great Britain during recent years was mainly due to the overlooking of the soil conditions of the area in the initial land use survey there. (*Land for Tomorrow*, pp. 71-72, 1951.) But, it should be remembered that this survey was originally conducted by some well-known British soil scientists and other land use experts. Inasmuch as such errors could have been committed in this project by these specialists, how much more hazardous would it be for the average geographers to undertake such assignment alone?

Some people suggest that with the advent of air photography in recent years, one may rely heavily, if not exclusively, on air photos as bases of compiling land use maps. True, any geographer or technician with some familiarity on the tones and shades of various objects concerning crops, forests, swamps, etc. can readily transfer them to base maps, if the latter are available. But, actually, what a geographer or a technician does under such circumstances is merely to transfer the areal extent of such phenomena (such as crop land, forest land, etc.) and only deal with them in quantitative terms. Land, as a resource, cannot be evaluated adequately in terms of number of square miles shown on maps; it is also a qualitative matter and its potential capability is often relative to the conditions of local economy and available agricultural techniques of the area in

question. Land mapped under the general headings as crop land, grazing land, etc. in different parts of the world may have widely different meanings and may involve land of greatly diversified potential capabilities. Therefore, insofar as accurate inventory of world land use is concerned, one cannot and should not rely on air photos too heavily. In fact, all map makers of this kind should have an intimate knowledge of the area they are working and should conduct both extensive and intensive field works there, preferably with the company of other specialists in all such excursions.

One of the common habits of us geographers is to dab maps—land use maps or otherwise—with fancy "patterns" of all kinds. Many times the drawing-in of these so-called "patterns" is based on carefully observed facts approximately generalized from field work, while other times they were only compiled from secondary sources. Thus, many of our present day land use maps, especially those of the latter category, i. e., the small-scaled land use maps based on compilations, are useful mainly for exhibition purposes or for class room work and cannot serve as bases for accurate inventory and actual land planning. In fact, for the latter purpose, it is not so much how "beautiful" and "colorful" these maps may look but rather how accurate and how useful they are. Unfortunately, many geographers in the past have tended to emphasize unduly the problems of color hues, legend symbols, etc. of these maps and have overlooked the basic problems of obtaining absolute accuracy of data collection in the initial surveys of their work. Of course, this does not necessarily mean that all such land use maps should be as accurate as blue prints for engineers or architects; however, it does imply that they must rise above the level of many of the schematic and over-generalized small-scale land use maps existing at present.

Problem of Standardized Nomenclature

Second, the problem of well-defined and standardized nomenclature for mapping and coordinated classification schemes for the data collected:

Since this inventory of land use is a world wide project, it would be profitable at this stage of the game to standardize, in so for as possible, the mapping nomenclature so that the data can be set on a comparable basis and their meaning fully understood on a world map. For instance, the terms "grazing land," "pasture land" and "meadows" for northwest China, the United States and Great

Britain respectively may include lands of greatly varied productivity and potentiality. The same thing may be said about the term "crop land" or land types of other categories. For example, the "crop land" of the spring wheat belt of Northwest China and the "crop lands" of South Central China, of the Po Valley of Italy or in many parts of Japan, etc., may contain lands of highly varying qualities, and a general term "crop land" will not convey the same meaning on a world map.

Thus, a confused and poorly-defined mapping nomenclature will seriously complicate the subsequent work of evaluation and classification of the various land use types on a world wide basis both in terms of present productivity and future potentiality of these lands. Consequently, land classified as Class I or Class II in Great Britain on a world land use map will not convey the same meaning as Class I or Class II land in China or in India or in many other parts of the world. A number of methods may be devised to solve partially this serious difficulty. For one thing, it is desirable to establish as many well-defined and detailed sub-categories of land use types as technically feasible under each of the main categories (such as crop land, forest land, etc.) so as to cover the maximum number of diversified conditions in various parts of the world. Indeed, this will be a very complicated and thorny problem to solve and would require careful planning, thoro discussion and continuous experimentation by many workers in the field in the years to come before any comprehensive scheme on a world wide basis can finally be established; it is, however, beyond the scope of this short paper at present to go into detail on this matter. In brief, the basic principle here is to establish such a standardized nomenclature and unified classification scheme that it will be neither too coarse-meshed (that each category may convey no real meaning or significance on a world wide basis) nor should it be too fine-meshed (that the map will be crowded with too many insignificant local details and thus destroy its value as a world map).

Incidentally, one of the major purposes for this project of inventory world land use, as announced by the Commission, is especially for the benefit of those "under-developed" countries. Here, the land use map makers will be confronted with many difficulties. For one thing, the lack of reliable base maps in most of these countries would be a formidable handicap for this project; also, the very term "under-developed" areas, in terms of agricultural land use, if

applied to China and India, is most misleading. Actually, in terms of agricultural land use, these two countries are "over-developed" in so far as the availability of unused arable land is concerned. For China, the writer doubts very much that any competent county (hsien) magistrate of that country would need a land use map maker to tell him where the large amount of high quality unused arable land is available in his own individual area. The truth of the matter is that there is little or none of such land available in many parts of that country. One of the crucial issues of agricultural land use in these so-called "under-developed" areas today is not so much the search for new unused arable land, but rather the application of modern scientific agricultural techniques (such as plant breeding, insect control, application of chemical fertilizers, etc.) on land already under cultivation, that is, to seek for what many agriculturalists called a "vertical" development rather than a "horizontal" development—the location and expansion of new areas for cultivation—of agricultural production. The often quoted statement that Great Britain, on account of its land use surveys undertaken in the 1930's, was able to increase greatly her food supply during the Second World War, is only telling half of the story; as a matter of fact, from an agricultural point of view, that country could be considered as "under-developed" when the Second World War broke out because there were large aras of fertile unused arable land (meadows) available in that country then. Unfortunately, such happy conditions do not exist in many of the so-called "under-developed" old agricultural countries in Asia, whether with or without the blessing of the proposed land use inventory surveys of International Geographic Congress.

PROBLEM OF SCALE OF GENERALIZATION

Third, the problem of scale of generalization concerning various maps both for data recording and for final compilation, the effective utilization of data collected and recorded on these maps, and the practical usefulness of the maps thus produced:

The problem of scale of generalization of map data with varying scales is a common age-old problem to all map makers and map compilers, but it is especially significant to land use map makers in the present project. There are many genuine difficulties in this connection. In the first place, on what base map or maps should these initial land use data be recorded which may be profitably used later

for the production of the final map? In the so-called unit-area concept based on the fractional code system, as currently used by many land use map makers, many factors may be involved, and in a single entry of such observations, consisting of both numerator and denominator, there may be many items involved, and it would require sufficient space on the base map to record them. Professor James reported that in his mapping of northeast Brazil he had great difficulty in recording field data on his base map of 1:1,000,000 scale. He also stated that on this particular scale it required at least the space of four square miles on his map to make one single entry of his data then. This revelation is certainly no surprise to all those who ever had any experience with field mapping of land use. This is indeed a serious problem and merits our careful attention. The second question in this connection is that even after the field data are accurately gathered and properly recorded on the base map, how can the data so collected be generalized on map or maps of suitable scales useful for accurate inventory and planning purposes. The present writer has some doubt as to the practical usefulness of a world land use map of 1:1,000,000 scale as now proposed. If merely for portraying the major land use types, such as crop land, forest land, grassland, swamp land, major settlement centers, etc., one may question the necessity of launching such a new project and with the tremendous amount of labor, money and time involved. In fact if one makes thorough studies of physical maps of the same scale (1:1,000,000) of many parts of the world (if they are available and if they are accurate), together with careful consultation concurrently of same areas concerned (assuming again they are all accurate), one probably can obtain the same results (or nearly the same results) as to be achieved by the present project. This is true at least in so far as an understanding of the general distribution of major land use types (i.e., crop land, forest land, swamp, major settlement centers, etc.) of various countries of the world is concerned.

Besides, in order to economize the use of time, labor and money for this project, it is essential that the difference in scales of the inital base map or maps of data-recording and that of the final map be kept as comparable as possible. Indeed, it would be sheer folly for any geographer to attempt to generalize and transfer data recorded from a base map of 1:10,000 scale to a final scale map of 1:1,000,000 scale, if indeed it is possible to do this at all! (Of course,

these large-scale land-use maps, if accurately constructed, may be invaluable for local land planning purposes, but this does not alter the fact that the original work done on these large scale maps, say 1:10,000 or 50,000, etc., does not contribute to the final product of 1:1,000,000 scale map.) Professor Finch, one of the pioneering workers in this so-called unit-area-fractional-code system of land use mapping, in his well-known "Monfort" study (Finch, V. C. *Monfort, A Study in Landscape Types in Southwestern Wisconsin, Wisconsin,* [1933]), has demonstrated in the most convincing manner the importance of this problem of scale of generalization in land use mapping. As a matter of fact, Professor Finch's study in that connection may be called a failure in so far as the effective use of his data for generalization purpose is concerned. The difficulty was that Professor Finch had collected and recorded so much data on his base map that he could not draw meaningful conclusions from them subsequently. Thus, the time has come for us to think about these land use mapping projects not merely as a novelty for illustrating certain geographic techniques by a few university professors or by a small number of graduate students in geography, but rather we should conceive them in terms of their practical usefulness to planners. In other words, we should be aware that time, labor and money spent on the construction of these maps must be commensurate with their practical usefulness for accurate inventory or actual planning purposes. We cannot rely indefinitely upon the courtesy of our graduate students or the altruism of our Ph.D. candidates in geography to undertake such tasks merely for the pleasure of doing them, invaluable as such experience may be in their professional training.

Above all, it is also pertinent to remind our geographer colleagues that land use maps of an area (unlike the physical maps of the same area) do not remain static and they may change considerably within a very short period of time. Therefore, one may justifiably pose this question: how frequently the revision of these maps (assuming them to be on 1:1,000,000 scale as now proposed), if once completed, may be and can be made, considering the huge costs involved in such an undertaking relative to their genuine practical usefulness to the public.

SUMMARY AND CONCLUSION

In conclusion, in order to assure a complete success of this important project of inventory of world land use, one should not over-

look the three basic problems mentioned above. It is hoped that the Commission will give careful consideration and urge extensive discussion of them among professional geographers before launching too many uncoordinated and widely scattered land use surveys thruout all parts of the world, based on poorly-defined mapping nomenclature and with promiscuous map scales which will be most difficult for generalization purposes. Otherwise a great amount of time, labor and money will be spent in vain and the maps produced will only have limited meaning and will be of restricted usefulness and may not serve the fine purpose intended by the Commission.

GEOGRAPHY AND RESOURCE-USE EDUCATION

SIGISMOND DER. DIETTRICH
University of Florida

Today, more than ever before, people have become fully conscious of the tremendous significance that resources play in human life and in society. With the present anxiety about the availability and sufficiency of *critical materials* thoughtful citizens can no less remain indifferent to the problems of natural resources than they can overlook the problems of man power and the survival of *our type of living* which are manifestations of our human and societal resources. This growing awareness about the problems of natural and cultural resources lead to the emergence in the South of the idea of resource-use education.

RESOURCE-USE EDUCATION

What is resource-use education? It is a new philosophy which believes that in a democracy education should prepare the children and the youth for citizenship so that they shall be able to assume the responsibilities as well as the privileges of living in a democracy. The school in a democracy has to be a functioning part of the community and has to extend its functions beyond the traditional limits in regard to whom, what and how to teach. By accepting the philosophy of resource-use education the school has to build an educational program that aims at the improvement of living thru the wise use of resources which program should encompass not only the children and youth but also the adults of the community.

The wide scope of such a program and its diversity places addi-

tional burdens upon the teachers. It leads them into new fields of action, into new types of experiences. Therefore, if the program is to be expected to succeed, the teacher training institutions have to assume the responsibility of providing future teachers with the necessary skills, understandings and experiences to enable them to carry out the program of resource-use education.

Basic needs of the program. In a program of resource-use education it is necessary that teachers and administration personnel should have: 1. at least basic information of their respective state's resources; 2. some theoretical background in problems of resource utilization; 3. a thoro understanding of *local* resources and related problems. These three prerequisites of a successful program of resource-use education are preeminently geographic in their nature. Thus the study of geographic conditions should be the basic phase of the program. The geographic approach of balanced integration between natural and human resources must be the foundation from which the more limited socio-economic phase of the program evolves. The third and final phase is the purely educational problem how to translate the gained knowledge and information in the actual teaching. This division is natural and logical. After all, regional resource development depends upon two factors: first, the natural potentials represented by factors of the physical environment; second, the human potentials which translate not only the natural potentials into socio-economic realities according to their own human limitations but also develop their own interest potentialities to an ever increasing extent. Thus the relationship between man and his resources is a dynamic and ever changing one.

THE GEOGRAPHER'S CONTRIBUTION

The geographer's contribution to resource-use education is clear cut. It is he who studies the distribution of resources, it is he who correlates the natural and human factors and it is he who has developed special techniques which have proved themselves of high value in resource-use education. In addition, by the very nature of his field of study the geographer should be the one who should strive ceaselessly to bring down to earth the problems, focus them upon their appropriate *locale.*

Resource-Use Programs in Florida. According to these considerations, the Geography Departments of the three largest universities of Florida, the two state universities and the University of

Miami developed their own resource-use programs. Tho in the main they parallel each other, each department has its own special emphasis. The University of Miami has done most of presenting the problems of resource-use to the people. Florida State University emphasizes the educational aspects of the program with such important contributions as the textbook "Florida, Wealth or Waste?" for use in the public school system and the educational color film of the same title. At the University of Florida the academic phase, both in research and teaching, receives most attention. Following the lead of these three institutions, courses dealing with problems of resources have been included in the study plans of practically all Florida colleges and universities.

At the University of Florida, which was one of the first southern institutions to instigate formal academic work in problems of resource-use, a program was developed consisting of three academic courses: GPY/ES 382, Principles of Resource Utilization; GPY 305, Geography of Florida and GPY 448, Geography of the South. These courses answer the need for a clear point of view and partially fulfill the subject matter requirements, together with giving a theoretical background of resource-use and basic information of the state's resources. While they offer some experiences in professional techniques, by their general nature they cannot satisfy the need for social competences and for a thoro understanding of *local* resources and related problems.

Field Course in Resource-Use. To satisfy the need for such work and to give it an academic framework with proper credit attachments, a field study course has been established at the University of Florida in resource-use called GPY 490, Field Course in Resource Utilization which carries three hours credit. This course terminates the undergraduate resource-use program. After studying the subject matter fields and the principles of resource-use, the students have an opportunity to do field work and to learn how to apply theoretical knowledge to actual conditions. In this course, emphasis is focused upon the specialized geographic field techniques and their adaption to the needs of the resource-use educational program. The course differs from a regular geographic field course in its emphasis upon educational problems and teachers' needs. The difference in terminology between field course and field workshop is to satisfy academic requirements. The course can be offered either on campus or off campus in cooperation with

the Extension Division and the College of Education. In the first case it is called a field course. In the second case when it is offered for the teachers of one county, it operates as a field workshop.

The plans for this course had been worked out by the Department of Geography in cooperation with the General Extension Division and the College of Education of the University of Florida. The idea was first tested in an extension course in Palatka, Putnam County, in 1946. As the results were highly satisfactory, plans were laid for the formal recognition of this type of work by the College of Arts and Sciences of the University. This involved a great deal of negotiation and discussion before it was finally approved during the fall of 1948.

Field Course Versus Workshop. The field workshop is somewhat different from other workshops in the unity of its program. It is motivated by the belief that doing things is the best way of learning them. Therefore, the techniques recommended to be used are all practiced and focused upon the local area in which the teachers are working. It aims to: 1. convince them of the validity and importance of resource-use education, 2. acquaint the teachers with the natural, human and socio-cultural resources of the area, 3. make them realize the relationships between these resources, 4. train them in the various techniques, 5. compile the gained information for future use and reference and 6. help them to channel the gained information into the various levels of teaching.

Palatka Experiment. The course organization and content has evolved from years of experience and experimentation with the problems of field work. The first actual experiment with this type of work in Palatka has clearly indicated the need for and the value of such work. The course was taken by a large number of teachers, a few administrative people and by the county agricultural agent and his assistant.

During the preliminary discussion it became evident that the teachers had 1. little knowledge if any of the county's resources and industries, 2. not visited outlying parts of the county, 3. not availed themselves of local resource-people and source materials. The remedies for the situation were close at hand: 1. several field trips, planned and arranged by various members of the class, took all of them to every part of the county, 2. during the planning stage the students established contacts with resource people who were not only asked to help in planning the field trips but were invited to

attend class meetings and discuss their specialties informally with the class and 3. in the course of the field trips, plant visitations and interviews, a great wealth and variety of local source material was discovered. Of course, the presence of the county agent in the class was highly beneficial. In addition, representatives of other agencies and of local business organizations also visited the class.. Thus the former isolation of the school from the community was broken down.

During the course various types of techniques were tried and improved. The whole work being based on committee reports fostered cooperation. Most of the material collected came from individuals, thus varying techniques of interviews were tried and discussed. Time limitations did not permit a thoro discussion of the construction of questionnaires and their use, but their role has been indicated. Ultimately, based upon the field experiences, committee reports, class discussions with resource people and upon the more conventional statistical and other published materials, a rough draft of the resources of Putnam County was prepared. This report was accompanied by maps, charts and other illustrative material gathered or prepared by the members of the class. Again time limitations prevented the students to work out, within the framework of the class, the problem of channeling this material into the proper levels of teaching. The material, however, being available was widely used during the ensuing school years.

Community Reaction. The activities of teachers visiting potato fields, factories, kaolin mines, fishing establishments and canneries, citrus groves, towns, hamlets and ranches caused, at first, considerable consternation among the citizens, which gave way to wonderment, only to turn into genuine interest in these unconventional activities. This prompted the decision to close the class with an exhibit of the County's resources. A public meeting was held in connection with the exhibit at which the gist of the resource report was presented to a large group of citizens. A number of public functionaries was asked to participate actively in the meeting which further strengthened the ties between the teachers and the other leaders of the community.

RESOURCE-USE FIELD WORKSHOP IN OPERATION

The first full fledged resource-use field workshop was offered in Osceola County during the summer of 1949. It was preceded by

offering the Principles and the Florida courses thru the Extension Division during the fall and spring semesters. During the fall the first planning conference was held with the county administrative staff. This was followed by two more conferences in which all the teachers participated. Thus the preliminaries were all completed *before* the course was opened.

The first morning was taken up by the formalities of registration. The afternoon was devoted to orientation and to the assignment of the work committees. The second day the orientation continued. The third day was devoted to conducted field trips. After that the work was up to the individuals and committee teams. Twice a week or so, social affairs were planned either in the late afternoon or in the evening. The third and last week was devoted mainly to the writing of the county and the technical reports and to channeling of material into the proper levels for teaching. As in Palatka, the course ended with an exhibit and public meeting.

Course Organization. Based on the actual testing thru experience it was found that the following organization of the work is highly satisfactory:

I. Orientation:
   1. What are resources?
   2. Resources of Florida.
   3. Preview of resources of area selected for study.
   4. Discussions by specialists and resource people.

II. Conducted field trips over the area for the class as a whole.

III. Organization of class into the area committees: of the selected area, a team of two or three receives a certain section in which they are going to work, studying the total environment, natural and human alike.

IV. Report, discussion and evaluation of the area committees' work.

V. Reorganization of class into topical committees studying such fields as:
   1. Natural Environment
   2. History
   3. Industries
      a. Agricultural
      b. Manufacturing
      c. Tourist and Other Trades
   4. Population, Labor and Employment
   5. Housing
   6. Urban Conditions
   7. Family Life
   8. Schools and Education
   9. Government and Politics
   10. Societal Institutions

   These committees study the phases selected in the whole area.

VI. Report, discussion and evaluation of the topical committees' work.

VII. Preparation of the report on the area's resources.

VIII. Channeling information gained into various levels of teaching.

FRUEC Approval. The Florida Resource-Use Education Committee has always shown great interest in the experiments with the field course. After receiving the report of the success of the field course, the chairman appointed a subcommittee to study the role and value of field courses in the resource-use education program. The subcommittee, after studing the records, approved the idea of the field course and reported to the committee at its meeting on May 25-26, 1950 that:

> It is the Subcommittee's unanimous opinion that in the education of students, fieldwork connected with their area of concentration should balance the formal classroom work.
>
> Therefore, the Subcommittee recommends that:
>
> 1. Fieldwork should be included in the program of resource-use education.
> 2. Since teachers have to learn about local situations, to use them in their teaching, a field workshop or a field course in resource-use should form a part of *all teachers' educational programs.*
>
>   Whether pre-service teachers take this work during the term as on-campus work or during summer in the field, should be optional. For in-service teachers, it is recommended that they take it in fieldwork during the summer. If that is not possible, then thru an extension course.
> 3. A field course or a field workshop should be required as part of the study program of people specializing in resource-use education.
> 4. The courses in resource utilization should be included as recommended electives in the *general agricultural curriculum.*

This report was unanimously accepted and approved by the Committee recommending thus the inclusion of a field course or field workshop into the study plan not only of all teachers but, upon the recommendation of representatives of the Soil Conservation Service and the Agricultural Extension Service, as an elective also into the general agricultural curriculum.

CONCLUSIONS

Here then is an academic framework for a practical field course adapted to the needs of resource-use education. The geography courses on the state and the South are essential, basic courses for anyone interested in resource-use education. The principles course is a primarily academic course in which the use of resources (economic geography) is examined in the light of the resources' physical qualities and evaluated by societal desirabilities. In the field course all theoretical considerations are brought down to one definite locale. Geographic field methods are used and the geographic approach and interpretations are concretely illustrated. In one word, the field course can be considered as the most important

direct contribution of the field of geography to resource-use education.

Ever since resource-use came to the educational limelight everybody was talking *about* resources. The realization that man is continuously "using his resources" in his everyday activities and that he himself is the most valuable resource, has profoundly affected many people.

The earthy reality of resources was instrumental in shaking the foundations of academic ivory towers, and in breaking down the isolation of school from community. Unfortunately, when sociologists, educators and even some economists discovered the good earth, the geographers, at least in the South, seemed to have disappeared from the scene. Regionalism, environment became almost completely expropriated by the sociologists and cultural anthropologists. Resource-use was on its way of becoming a new slogan around which psycho-pedagogy can build another core-curriculum.

Thus, tho the geographers were early trail blazers in the conservation movement, the main impetus of the resource-use education program stemmed undoubtedly from the sociologists, especially of the Chapel Hill group. Since 1945 when there were only three geographers attending an early, pioneering conference of the Committee of Regional Studies, the situation has improved considerably, but geographers as a whole are still not as active in this field as they should be. Without the geographer's knowledge and earthy point of view, the program may flounder by *talking about* and not *knowing* resources.

The experiences in Florida have proven not only that geographic fieldwork and techniques are essential to the success of a program of resource-use education, but also that geographers can make valid contributions and render leadership in the movement. Thus, by fully utilizing the specialized training and the wide, integrated knowledge of the geographer, resource-use education will be able to fulfill its lofty aim of really preparing the growing generation for enlightened, intelligent citizenship in our citadel of freedom and democracy. Here then are fertile fields and wide horizons for geographers where they may yet make their greatest contribution to the American way of life!

NATIONAL COUNCIL AT WORK

TENTATIVE PROGRAM OF NCGT MEETING

PALACE HOTEL, SAN FRANCISCO

General Theme: APPLIED GEOGRAPHY IN THE FAR WEST

Thursday, August 19, 1954

AM Registration
Mapping in Practice
New Methods of Representing the Earth's Face
Noon State Coordinators Luncheon—Everyone welcome
PM Far West Historical Geography
A series of invited papers on the geographic factors affecting development of the West Coast

Friday, August 20, 1954

AM Business meeting of the Council
Human Relationships in the Near West
A series of invited papers on the human geography of eastern Asia
Noon Luncheon
Speaker on "The Setting of San Francisco"
PM Teaching Conservation in the West
Papers will describe field workshops in conservation for teachers and public schools. Other papers will deal with major resources and their conservation.
7 PM Annual Dinner
Announcement of Awards
Speaker on "Pacific Horizons for the Geographer"

Saturday, August 21, 1954

Field trip by airplane over the San Francisco Bay Region
Field trip by bus to industrial and commercial San Francisco

TV PROGRAM

A special 30-minute program on geography teaching by television will be given over TV KPIX, San Francisco sometime during the sessions.

OFFICERS IN CHARGE

The program is being arranged by Dr. Otis W. Freeman, 2428 Miller St., Seattle 2, Washington, president of the NCGT.
Chairman of Local Arrangements is Dr. Lyle Gibson, San Francisco State College.

NCGT COMMITTEE CHAIRMEN

Correspondence and suggestions regarding their work should be addressed to the chairman.

Nominating: Dr. Ken Bertrand, Catholic University of America, Washington, D.C., Chairman, Prof. Aldelbert Botts, State Teachers College, Trenton, N.J., Prof. H. F. Raup, Kent State University, Kent, Ohio.

Distinguished Service Award: O. W. Freeman, 2428 Miller, Seattle 2, Wash., Chairman, Mamie Anderzhon, Prof. Katheryne Whittemore, Dr. Earl Shaw, Prof. Howard H. Martin.

Planning: Zoe E. Thralls, University of Pittsburgh, Chairman.
Publication: John Streitelmeier, Valparaiso University, Chairman.
Research: Prof. W. J. Berry, Western State College of Education, Kalamazoo, Mich.
Membership: Ina Robertson and Mamie Anderzhon, co-chairmen.
Resolutions: To be appointed. Suggestions can be sent to O. W. Freeman or Ina Robertson, Valley City, N.D., until chairman is available.
Director of State Coordinators: Mamie Anderzhon, William Beye School, Oak Park, Ill.
Inquiries: Prof. Fred K. Branom, Chicago Teachers College, 6800 Steward Ave., Chicago 21, Ill.

GEOGRAPHICAL PUBLICATIONS

Colliers World Atlas and Gazetteer. Rand McNally Edition, 1953. Co-publishers: Chicago: Rand McNally and New York: Crowell-Collier Publishing Company. VIII and 472 pages, 128 colored maps 14 x 11 inches.

This attractive atlas will well supply the needs of most public schools, small libraries and individuals. It will be useful to students in departments of geography and in college libraries for reference in cases that do not require large scale detailed or physical relief maps.

The maps are legible and attractive with insets of urban centers on a larger scale. Except for one world physical map and eight world economic maps, the maps are political in character. Those needing information on physical relief must use other atlases.

The World Index and Gazetteer is well organized and exceptionally complete for an atlas of this size. Photographs, concise urban descriptions and numerous city plans are included and will be useful to many. There are 205 pages of four columns each in the gazetteer. 75,000 names appearing on the maps are listed. The type is clear and easy to read. Populations given are the latest available.

Colliers World Atlas and Gazetteer is recommended for any situation which an attractive, well printed, properly organized atlas intended for general use, will satisfy.

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